4. (a) Prove that, for all positive integers n,

$$\sum_{r=1}^{n} \frac{1}{(5r-2)(5r+3)} \equiv \frac{n}{a(bn+c)}$$

where a, b and c are integers to be determined.

(5)

(b) Hence, showing your working, find the exact value of

$$\sum_{r=10}^{50} \frac{1}{(5r-2)(5r+3)}$$

(2)